

Assessment of the Trip Pattern of High Density Residential Zone in North Central Nigeria: Gender Perspective

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Abstract— Low income earners constitute a large percentage of the nation's population with a significant percentage of the female gender. This study elucidates the germane factors affecting the modal choice of low income household in Nigeria with special focus on the female gender in Okene, Kogi state. To achieve this, questionnaires were distributed to respondents in the study area using 1 in 15 dwelling units. It was buttressed with the use of focus group discussion method. Information on socio-demographic characteristics, trip pattern, modal split and frequency of trips were analyzed with the aid of statistical tools. The result of the research showed that the trip pattern of the female gender is higher than the male. Conversely, male gender frequency of trip is higher than the female with 59% and 41% respectively. Income was found to be the significant factor affecting the choice of mode among the female gender in the study area. The result of this research will aid government at all levels in providing an effective mass transit scheme to cater for the high density residential dwellers with special focus on the female gender.

Keywords— Mobility; frequency of trips; High density residential zone; modal split; female gender.

I. INTRODUCTION

Transportation and mobility is as old as humanity itself. It is one of the basic needs of humanity for survival. Mobility can be defined as the travel behaviour measures majorly categorized as daily or weekly trip which could also be motorized or non-motorized trip that is related to distance (2). There exist a relationship between land uses and travel characteristics. (3) Showed the relationship between trip pattern and work trip of both female and male gender. Women trip pattern is quite different from their male counterpart in

most nations. In the developed world, men are considered to have a high trip pattern than female according to (1).

Study by (4) showed the relationship between trip pattern by focusing on shopping trips in urban centre. (5) studied travel mode within university environment which showed that travel modes in the university environment should be made to be more gender friendly especially in the government owned university where the transportation systems were constructed in era where the female gender were grossly underrepresented in the university system.

Also, the size of settlements to a very large extent affects the range of local jobs and services that can be supported and this influences the range of public transport services which can be provided. Densely populated areas are prone to people who tend to travel shorter distances and they spend less time travelling on average (6)(7)(8). Studies by (9)(5) showed the effect of land use and how income and car ownership affects both work trips and non-work trips in Akure. There exist dearth's of literature on mobility using gender approach which becomes necessary in a bid to forecast the trip generation of a city considering female gender as they constitute a large proportion of Nigeria's population. Mobility limitations have so many adverse effects from the health angle. Accordingly, built environment also have an effect on trip pattern according to research by (1)(10). Nigeria as a nation has a high percentage of the poor in which the female gender contributes a very high percentage according to (5). Hence this study will elucidate the trip pattern of female gender in Nigeria with special focus on Okene, Northern Nigeria.

II. METHODOLOGY

A. Study Area

Okene is the administrative headquarter of Igbira ethnic group located in [Kogi](#) state, south-central Nigeria. It lies at the intersection of roads from Lokoja, Kabba, Ikare, Ajaokuta, and Anchi. The town was originally founded on a hill near the present site; it lies in the valley of the Ubo River, which is a minor tributary of the Niger River. The people of Okene are mostly Cotton weavers which are a traditional craft, and the women folks are known for their weaving of imported silk (11). The LGA has an area of 328 km²; the last population census conducted stated that the LGA has 320,260 people (Figure 1).



Figure 1: Map of Kogi State showing Okene

B. Sampling procedure and strategy for data collection

Questionnaires were distributed in the study area for six months. The question entails the socio economic and demographic characteristics of the study area. Information on trip pattern was also studied to show the relationship between frequency of trips, per capita trip etc. of the female gender. One in fifteen dwelling unit was adopted based on the population of the study area. The focus group discussion was done during the women meeting in the area (both business and religious gathering).

C. Data Analysis

This research was analyzed with the aid of SPSS version 16, tables and curve were presented to show the relationship between the studied variables.

III. RESULTS AND DISCUSSION

• Focus Group Discussion Result

Based on the result of the focus group discussion, the high density area is mostly inhabited by the low income earners. This residential zone is the domain of the core inhabitant of Okene. They are mostly occupied by the Igbira tribe of kogi state. The discussion showed that most of the dwellers are artisans, farmers, traders, house wives and the aged. In a bid to a randomly select the sample size, the business or traders group meeting did not captured the educated female so religious group was also used. The result of the focus group

discussion showed that the women gender are often times low income earners and possess fewer cars than the male counterpart as asserted by (12).

• Frequency of trips

The work trip pattern of the male gender showed that it is a little bit higher than the female work trip pattern with 59% and 41% respectively Figure 2. Conversely, female gender accounted for the highest frequency of non-work trip. Correspondingly, the female gender has the highest aggregate frequency of trips. On the overall they embark on more trips. Also majority of the female are low paid (Fig 3).

• Gender disparity in income and mode of transportation on work trip pattern

The result of the Levene's Test for Equality of Variances and t-test for Equality of Means however confirms that the observed differences in monthly income, work trip and mode of transportation were not significantly different among the male and female participants. Only income significantly affected the trip pattern of the respondents.

• Mode of transport on non-work trip pattern

It was further observed from the Levene's Test for Equality of Variances and t-test for Equality of Means in the independent samples test that there were no significant differences in non-work trip and mode of transportation among the gender components as evidenced from the result in table 1.

The Focus Group Discussion showed that the most significant mode of transportation of the female gender is taxi compared with male gender that mostly adopts the use of motorcycle. Taxi as transportation mode in Okene is readily available but lacks flexibility. As a result a significant number of the female gender either adopt the use of motorcycle or walk. Nevertheless, based on the cost, high percentages of the respondents adopt the use of walk especially for recreational trips. Income was stated as being an important factor in determining the modal choice. This may be due to the fact that the male gender are highly paid than the female and they engage in more lucrative jobs than the female gender. This discussion further showed that majority of the female gender are either house wife (without a job), petty traders who work from home and this significantly affected the work trip pattern.

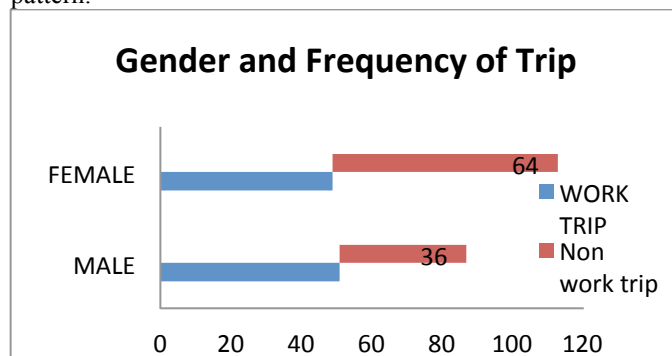


Figure 2: Relationship between gender and frequency of trips

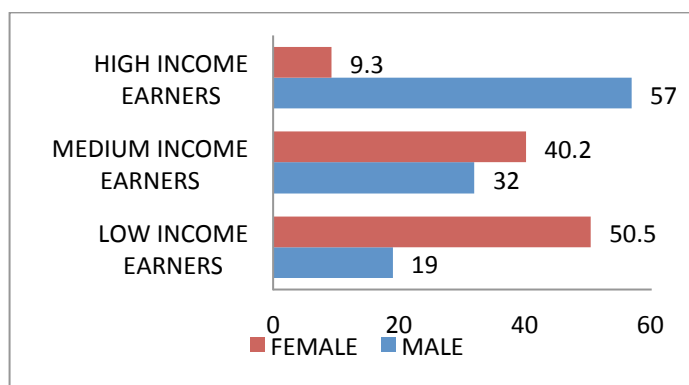


Figure 3: Relationship between income and gender

Table 1: Non Work Trips Levene's Test for Equality of Variances for Non Work Trip and Work Trip.

Non Work Trip		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
Monthly Income	Equal variances assumed	0.016	0.899	0.01	28	0.992	0.005
	Equal variances not assumed			0.01	26.621	0.992	0.005
Work trip	Equal variances assumed	0.311	0.051	-0.28	28	0.782	-0.036
	Equal variances not assumed			-0.275	24.164	0.786	-0.036
Mode of transportation to the place	Equal variances assumed	0.026	0.872	-0.434	28	0.667	-0.249
	Equal variances not assumed			-0.435	26.077	0.667	-0.249
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IV. CONCLUSION

The result showed that female have the highest frequency of trips on the aggregate but lower frequency of work trip compared with the male gender. Income was found to be a significant factor affecting the frequency of trips and modal choice. From the Levene's Test for Equality of Variances and T-test for Equality of Means in the independent samples test showed that there were no significant differences in non-work trip and mode of transportation among the gender components.

V. RECOMMENDATION

The result of this research showed that income is a significant factor affecting the trip pattern, modal split and frequency of trip of the female gender. Government at all levels should provide a low cost transportation facility to cater for intra city trips of the female gender because they have the highest frequency of trips.

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